

Chapter 17 The Atmosphere: Structure and Temperature**Section 17.3 Temperature Controls**

This section describes the factors that influence temperature and discusses worldwide temperature distribution.

Reading Strategy

Previewing Before you read, use Figure 15 to describe the temperature variations for Vancouver and Winnipeg. For more information on this Reading Strategy, see the **Reading and Study Skills** in the **Skills and Reference Handbook** at the end of your textbook.

Temperature Variations	
Vancouver	
Winnipeg	

Why Temperatures Vary

1. 🗎 List five factors other than latitude that exert a strong influence on temperature.

Match each location with its effect on temperature. You may use some effects more than once.

Location	Effect on Temperature
_____ 2. windward of a large body of water	a. lower temperatures
_____ 3. at a low altitude	b. higher temperatures
_____ 4. on a leeward coast	c. more moderate temperatures
_____ 5. behind a mountain range	d. less moderate temperatures
_____ 6. at a high altitude	

7. 🗎 Circle the letter of the sentence that is true.

- a. Land heats more rapidly and cools more slowly than water.
- b. Land heats more rapidly and cools more rapidly than water.
- c. Land heats more slowly and cools more slowly than water.
- d. Land heats more slowly and cools more rapidly than water.

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8. Why does the Southern Hemisphere have smaller annual temperature variations than the Northern Hemisphere?

9. Is the following sentence true or false? A location on a windward coast will have a more moderate climate than an inland location at the same latitude. _____

10. Mountains can affect temperatures by acting as _____.

11. How does altitude affect mean temperature? _____

12. Circle the letter of the correct definition of *albedo*.

- a. line that connects points with the same temperature
- b. fraction of total radiation reflected by a surface
- c. trapping of heat in Earth's atmosphere
- d. transfer of heat by movement within a substance

13. ☞ What effect do clouds have on incoming solar radiation? _____

14. Is the following sentence true or false? Clouds have the same effect on temperatures during the night as they do during the day.

World Distribution of Temperature

15. Circle the letter of the lines on a map that connect points with the same temperature.

- a. albedos
- b. altitudes
- c. latitudes
- d. isotherms

16. What general trend does a world isothermal map show? _____

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WordWise

Complete the sentences by using the scrambled vocabulary terms below.

oureenhgse cefetf	tinrwe etolssic	thae
stohopperre	msrtheiso	psorseheme
gsirnp oenuixq	lauaumtn nexuiqo	nzoeo
mtethrosperhe	rremeauettp	nsatecrigt
msmeur sscotile	oonuncctdi	elodba
oraiiatnd	pssratorhtee	vococentin

The _____ is the bottom layer of the atmosphere.

Many clouds reflect a lot of sunlight because they have a high _____.

Temperatures decrease in the third layer of the atmosphere, the _____.

The _____ contains only a tiny fraction of the atmosphere's mass.

The _____ is the first day of summer.

In the Northern Hemisphere, the _____ occurs on September 22 or 23.

_____ is a form of oxygen with three oxygen atoms in each molecule.

Solar energy reaches Earth by _____.

March 21 or 22 is the _____ in the Northern Hemisphere.

_____ is the energy transferred from one object to another due to a difference in their temperatures.

The average kinetic energy of the atoms or molecules in a substance is its _____.

The ozone layer is found in the _____.

When you touch a hot metal spoon, you experience heat transferred by _____.

The lines on a world isothermal map are called _____.

Water being heated in a pan circulates because of _____.

Light reaches areas that are not in direct light by means of _____.

Winter begins on the _____.

The _____ keeps Earth warm enough to be a suitable habitat for most living things.